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10/630,773	07/31/2003	Takayuki Yogo	056208.52613US	8467

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EXAMINER	
WILLIAMS, ALEXANDER O	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/630,773	YOGO ET AL	
	Examiner	Art Unit	
	Alexander O. Williams	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Serial Number: 10/630773 Attorney's Docket #: 740819-982
Filing Date: 7/31/2003; claimed foreign priority to 8/1/2002

Applicant: Yogo et al.

Examiner: Alexander Williams

Applicant's Amendment/Substitute Specification filed 3/28/05 to the election of species of figure 6 (formerly claims 1, 2 and 6-17), filed 9/9/04, has been acknowledged.

Claims 1-17 have been canceled.

Claim 19 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 19, it is unclear and confusing to what is meant by "a substrate having **electronic elements** mounted thereon, **including at least one element** selected from the **group consisting of** conductor wires made of silver or silver alloys, resistors, capacitors, inductors, and diodes." The claim claims at least one. The claim positively claims "the exposed conductor wires are covered with a solder whose main component is tin." However, the electronic element including at least one element, does not positively claim conductor wires, but instead can be resistors, capacitors, inductors, and diodes. Therefore, if the claimed device only have, for example, resistors and not conductors made of silver or silver alloys, how does this claimed structure of exposed conductor wires exist? For example, the elected species was figure 6 in which a resistor, not a conductor, is claimed. Where is this structure shown in the drawings?

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claim 19, **insofar as claim 19 can be understood**, is rejected under 35 U.S.C. 102(e) as being anticipated by Hosoya (U.S. Patent # 6,879,033 B2).

19. Hosoya (figures 1 to 14) specifically figure 8 show an electronic device comprising: a substrate **11** having electronic elements mounted thereon, including at least one element selected from the group consisting of conductor wires made of silver or silver alloys, resistors, capacitors, inductors, and **diodes**; and an insulating overcoat **2**

covering the surface of the device; wherein the overcoat has openings through which a surface of the conductor wires is exposed; the openings are formed in a shape having no square corners and no acute angle corners; and the exposed conductor wires are covered with a solder **21** whose main component is tin.

(80) The above embodiments have illustrated examples of a semiconductor device applied to a MOSFET semiconductor chip. However, the present invention could be applied to other types of devices, including but not limited to a bipolar transistor, a diode, an integrated circuit (IC), or the like.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claims 18 and 20 to 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Masuda (U.S. Patent # 5,982,272).

18. Masuda (figures 1 to 12) specifically figure 1 show an electronic device comprising: a substrate **2** having electronic elements mounted thereon, including conductor wires **4** made of silver or silver alloys; an insulating overcoat **1** covering the surface of the device; wherein, the overcoat has openings through which the surface of the conductor wires are exposed; the openings are formed in a shape having no square corners and no acute angle corners; and the exposed conductor wires are covered with a covering material selected from the group consisting of a solder whose main component is tin, and **a conductive metal paste 5**.

(19) In this case, the shaft 5 can be formed by, for example, a metal. The front end of the shaft portion 53 is formed in a cylindrical shape and the front end of the shaft portion 53 is calked after inserting the shaft portion 53 into the rotor 3. In this manner, the shaft 5 can simply be coupled with the rotor 3. Further, a metal which is easy to plastically deform can be used for the shaft 5, such as copper, a copper alloy, red brass, or like material. Further, plating is carried

out on the surface of the metal for rust preventions As a kind of a metal for plating, gold, silver or palladium, or like material, can be used, as these materials have a pleasing ornamental appearance and prevent corrosion of the metal.

20. The electronic device according to Claim 18, Masuda show wherein the openings have a shape that is selected from the group consisting of a **round,** elliptical, rectangular with round corners, and rectangular with chamfered corners.

21. The electronic device according to Claim 18, Masuda show wherein the openings are covered with a conductive metal paste **5** which covers exposed surfaces of the conductor wires.

22. The electronic device according to Claim 18, Masuda show wherein the substrate has at least two layers **2,20**.

2) FIGS. 1-7, and FIGS. 8A, 8B, 8C, 8D and 8E show an example of a variable resistor according to one embodiment of the present invention.

(3) As shown by FIG. 1, the variable resistor generally comprises a case 1, a resistor substrate 2, a rotor 3, a slider 4, a shaft 5 for external operation, as well as other components to be described in the following.

(4) The case 1 is integrally formed into a square cylinder shape by heat resistant thermoplastic resin, thermosetting resin, or the like, to withstand soldering heat and to enable stable operation in a high temperature environment. As shown by FIGS. 5 and 6, on the top face of the case 1, a circular opening hole 11 and a recess portion 12 in an annular shape for arranging an O-ring 6 at its outer periphery are formed. Further, a recess portion 13 formed in an annular shape for fitting, a portion of the shaft 5 is formed at the outer periphery of the recess portion 12. An inner space 14 in a cylindrical shape for incorporating the rotor 3 and the slider 4 is formed at the inside of the case 1, and a stopper portion 15 in a fan shape is projected from a portion of the space 14. Further, a lower end opening 16 of the case 1 is formed in a square shape and a stepped face 17 is formed at the boundary between the inner space 14 and the lower end opening 16. Three notches 19a, 19b and 19c to which terminals 21, 22 and 23, mentioned later, are to be respectively fitted, are formed at a peripheral wall 18 surrounding the lower end opening 16.

(5) As shown by FIG. 1, the resistor substrate 2 is formed in a square plate shape fitted to the lower end opening 16 of the case 1 and is integrally formed by a material similar to that of the case 1. A seal resin 20 (with reference to FIGS. 3 and 4) is injected into a gap between the resistor substrate 2 and the lower end opening 16 and holes at the bottom face of the resistor substrate 2 to seal the lower end opening 16 of the case 1 thereby. One terminal 21 and two terminals 22 and 23 are insert-molded to the resistor substrate 2 in a state where the terminal 21 is inserted from one side of the resistor substrate 2 toward the central portion of the substrate, and the two terminals 22 and 23 are inserted from the other side of the substrate toward the central portion thereof. A collector electrode 25 is formed by one end portion of the terminal 21 exposed at the central portion of the surface of the resistor substrate 2. Further, end portions 22a and 23a of the terminals 22 and 23 on one side are exposed at the surface of the resistor substrate 2, and a resistive element 24 in a circular arc shape is formed on (and in contact with) the exposed electrodes 22a and 23a. The resistive element 24 is formed concentrically at the outer periphery of the collector electrode 25.

(6) FIGS. 3 and 4 show an example of a surface mount embodiment where terminals 21, 22 and 23 are folded back to the side of the rear face of the resistor substrate 2. However, the present invention is not limited to this embodiment. The embodiment having a structure of a face mount type in which the terminals are projected in an outward direction as shown by FIG. 1, or an embodiment having a structure of a lead type in which the terminals are folded to bend by 90.degree. so as to be in parallel with the central axis of the case 1, can be selected for use in a commercial product design, so as to match various requirements of the market or a particular application.

(8) The slider 4 is formed by a conductive metal plate having spring properties (e.g., the metal plate performs like a spring) made of a copper alloy, a stainless steel, a noble metal group alloy, or the like. Further, a noble metal or other material can be plated onto the slider, e.g., to form a gold or silver plating. In one specific example, when the conductive metal plate is made of copper alloy, nickel or copper plating can be applied on the conductive metal plate for a first layer, and then silver or gold plating can be applied over the nickel or

copper plating to form a second layer. In another example, silver plating can be applied to the metal plate first, following by gold plating which is applied over the silver plating. Another method of producing the slider 4 is to form a clad metal plate by welding or contact pressing the conductive metal plate and the noble metal outer layer.
As shown particularly by FIGS. 8A, 8B, 8C, 8D and 8E, the slider 4 is provided with a base portion 41 for attachment to the rotor 3 at the central portion thereof, and is provided with a first arm 42 substantially formed in a U-like shape on one end side of the base portion 41 and is provided with a second arm 43 on the other end side. The arms 42 and 43 are folded back in opposed directions respectively at folded portions 42b and 43b, (referred to here as "folded-bent portions"). At a front end of the first arm 42, a first contact point portion 42a that is brought into sliding contact with the resistive element 24 in a circular arc shape is formed to bend toward the side of the resistor substrate 2 (e.g., the side counter to the base portion 41). At a front end portion of the second arm 43, a second contact point portion 43a in a semispherical shape that is brought into contact with the collector electrode 25 is integrally formed. Particularly, the second contact point portion 43a is bent to rise toward the side of the resistor substrate 2 (e.g., the side counter to the base portion 41) and accordingly, the second contact point portion 43a intersects with the first arm 42 (when viewing the slider 4 from a lateral direction).

(19) In this case, the shaft 5 can be formed by, for example, a metal. The front end of the shaft portion 53 is formed in a cylindrical shape and the front end of the shaft portion 53 is calked after inserting the shaft portion 53 into the rotor 3. In this manner, the shaft 5 can simply be coupled with the rotor 3. Further, a metal which is easy to plastically deform can be used for the shaft 5, such as copper, a copper alloy, red brass, or like material. Further, plating is carried out on the surface of the metal for rust preventions As a kind of a metal for plating, gold, silver or palladium, or like material, can be used, as these materials have a pleasing ornamental appearance and prevent corrosion of the metal.

(20) FIG. 12 shows an example of a circuit module where a variable resistor C according to the present invention is mounted on a circuit board 7.

(21) As shown by FIG. 3, the variable resistor C may be formed as a chip part of a surface mount type. In this embodiment, the terminals 21, 22 and 23 are folded back to the side of the bottom face of the resistor substrate 2.
Circuit patterns 71 and 72 are formed on the circuit board 7 and the terminals 21, 22 and 23 (although the terminal 22 is not illustrated in FIG. 12) of the variable resistor C are soldered (with solder 73, 74) by reflow soldering or the like to the circuit patterns 71 and 72.

(22) In this manner, the circuit module can easily be downsized and made thinner since the variable resistor C is fabricated as a chip part of a surface mount type. The top face of the variable resistor C is sealed firmly by the
O-ring 6 and the bottom face is firmly sealed by the resin 20. Accordingly, despite the fact that a movable part (e.g., the variable resistor C) has been mounted on the circuit 7, a cleaning operation can be carried out to remove flux or the like from the circuit board 7 after mounting the variable resistor C. Further, the mounted variable resistor C can withstand use in an environment where the humidity is high, and/or where the mounted variable resistor C is exposed to sweat or the like (e.g., as in a hearing aid, in which the variable resistor C is placed in an ear canal of a user). Thus, the above-described circuit module design promotes protection against many types of harmful environments (e.g., by providing moisture and harmful weather resistance).

(23) Although according to the above-described embodiment, in order to seal the lower end side of the case 1, the resin 20 is injected into the gap between the resistor substrate 2 and the case 1, the present invention is not limited thereto. For instance, the sealing operation may be carried out by injecting, resin on the entire tace of the lower end opening of the case 1, or the sealing operation may be carried out by using, a sealing member such as an O-ring or the like.

(24) Further, although the O-ring is brought into press contact with and is held by the shaft 5 in order to seal the top side of the case 1, the present invention is not limited thereto. For instance, the intermediary region between the rotor and the case may be sealed in other ways (e.g., with a sealant).

(25) Further, the outer shape of the case 1 is not limited to a square cylindrical shape but may be a circular cylindrical

shape, or other shape. In this case, the outer shape of the resistor substrate 2 may not be a square plate shape, but may comprise a substantially circular plate shape resistor substrate.

Initially, it is noted that the 35 U.S.C. § 103 rejection based on wires and resistor and a substrate and an overcoat material deals with an issue (i.e., the integration of multiple pieces into one piece or conversely, using multiple pieces in replacing a single piece) that has been previously decided by the courts.

In Howard v. Detroit Stove Works 150 U.S. 164 (1893), the Court held, "it involves no invention to cast in one piece an article which has formerly been cast in two pieces and put together...."

In In re Larson 144 USPQ 347 (CCPA 1965), the term "integral" did not define over a multi-piece structure secured as a single unit. More importantly, the court went further and stated, "we are inclined to agree with the solicitor that the use of a one-piece construction instead of the [multi-piece] structure disclosed in Tuttle et al. would be merely a matter of obvious engineering choice" (bracketed material added). The court cited In re Fridolph for support.

In re Fridolph 135 USPQ 319 (CCPA 1962) deals with submitted affidavits relating to this issue. The underlying issue in In re Fridolph was related to the end result of making a multi-piece structure into a one-piece structure. Generally, favorable patentable weight was accorded if the one-piece structure yielded results not expected from the modification of the two-piece structure into a single piece structure.

Claims 18 to 22, 24 and 25, **insofar as claim 19 can be understood**, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Takayama et al. (U.S. Patent # 5,977,733).

18. Takayama et al. (figures 1 to 18) specifically figures 2 and 6 show an electronic device comprising: a substrate **1,B** having electronic elements mounted thereon, including conductor wires **3,5** made of silver or silver alloys; an insulating overcoat **1** covering the surface of the device; wherein, the overcoat has openings through which the surface of the conductor wires are exposed; the openings **4** are formed in a shape having no square corners and no acute angle corners; and the exposed conductor wires are covered with a covering material selected from the group consisting of a solder **2** whose main component is tin, and a conductive metal paste.

19. Takayama et al. (figures 1 to 18) specifically figures 2 and 6 show an electronic device comprising: a substrate **1,B** having electronic elements **3** mounted thereon, including at least one element selected from the group consisting of conductor wires **3,5** made of silver or silver alloys, resistors, capacitors, inductors, and diodes; and an insulating overcoat **1** covering the surface of the device; wherein the overcoat has openings **4** through which a surface of the conductor wires is exposed; the openings are formed in a shape having no square corners and no acute angle corners; and the exposed conductor wires are covered with a solder **2** whose main component is tin.

20. The electronic device according to Claim 18, Takayama et al. show wherein the openings have a shape that is selected from the group consisting of a round, elliptical, **rectangular with round corners**, and rectangular with chamfered corners.

21. The electronic device according to Claim 18, Takayama et al. show wherein the openings **4** are covered with a conductive metal paste **5** which covers exposed surfaces of the conductor wires **3**.

22. The electronic device according to Claim 18, Takayama et al. show wherein the substrate has at least two layers **9**.

24. Takayama et al. (figures 1 to 18) specifically figures 2 and 6 show an electronic device comprising: a substrate **1,B** having a conductor wire **3,5** made of silver or a silver alloy mounted thereon; and an overcoat **1** made of an insulator material covering the conductor wire; wherein the overcoat has an opening **4** having no acute angle corner wherein a surface of the conductor wire is exposed; and the surface of the exposed conductor wire is covered with a solder **2** whose main component is tin.

25. Takayama et al. (figures 1 to 18) specifically figures 2 and 6 show an electronic device, comprising: a substrate **1,B** having a resistor **3** mounted thereon, the resistor having conductor wires **3,5** and terminals **8,7** connected thereto; and an overcoat **1** made of an insulator covering the resistor and the terminals; wherein, the overcoat has an opening **4** formed in a shape having no acute angle corners wherein a surface of the conductor wires is exposed; and an exposed surface of the conductor wires is covered with a solder **2** whose main component is tin.

Therefore, it would have been obvious to one of ordinary skill in the art to use the **wires and resistor and a substrate and an overcoat material** as "merely a matter of obvious engineering choice" as set forth in the above case law.

Claim 23 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Masuda (U.S. Patent # 5,982,272) in view of Komada et al. (U.S. Patent # 6,332442 B1).

Masuda show the features of the claimed invention as detailed above, but fail to explicitly show wherein the electronic device is located in an air duct of an automobile.

Komada et al. Is cited for showing an intake air duct. Specifically, Komada et al. (figures 1 to 13) specifically figure 3 discloses wherein the electronic device is located in an air duct of an automobile for the purpose of providing an air duct which reduces the intake air noises at low engine revolving speeds, which can take in a sufficient amount of air at high engine revolving speeds, which inhibits the booming noises of low frequencies from generating, and which can be made with reduced costs without using the electronic control circuit and the electromagnetic valve, etc.

DOCUMENT-IDENTIFIER: US 6332442 B1
(4) This intake air duct is illustrated in FIG. 1 schematically. FIG. 1 illustrates a second intake air passage of an intake air duct, which has a first intake air passage and a second intake air passage.

(5) In FIG. 1, an interlocking member is abbreviated in order to understand the present invention with ease. Accordingly, a coiled spring 2000 is illustrated so that it directly contacts with an opening-and-closing valve 1000. Even if the interlocking member is thus abbreviated, such an apparatus operates similarly effects the advantages of the present invention. However, since it is worried that the precision of the operations maybe degraded by water and dust, the present invention is constituted so that a coiled spring indirectly urges the opening-and-closing valve by way of the interlocking member.

(6) Suppose that the leading end of the coiled spring 2000 contacts with the opening-and-closing valve 1000 at a point P, that the distance between the supporting point of the opening-and-closing valve 1000 and the point P is L.sub.1, and that the distance between the fixed point of the coiled spring 2000 and the point P is L.sub.3, a force F.sub.1 resulting from the intake air negative pressure F is acted onto the opening-and-closing valve 1000.
Accordingly, an upward rotation moment, F.sub.1.times.L.sub.1, acts onto the opening-and-closing valve 1000. The force F.sub.1 is divided into component forces F.sub.2 and F.sub.3, and the component forces F.sub.2 and F.sub.3 act onto the coiled spring 2000. Consequently, an upward rotation moment, F.sub.3.times.L.sub.3 a (i.e., a first urging force), acts onto the coiled spring 2000 at the point P.

(7) On the other hand, the coiled spring 2000 adversely presses the opening-and-closing valve 1000 in a direction opposite to F.sub.2 by its own elastic force, and a downward rotation moment (i.e., a second urging force) acts onto the coiled spring 2000 at the point P. Hence, when the downward rotation moment (i.e., a second urging force) exerted by the coiled spring 2000 is larger than the upward rotation moment, F.sub.3.times.L.sub.2 (i.e., the first urging force), by the intake air negative pressure, the opening-and-closing valve 1000 is inhibited from swinging by the coiled spring 2000, thereby maintaining the closed state of the second intake air passage 3000. Thus, since air is taken in only through the first intake air passage having a minor diameter, the acoustic mass enlarges so that it is possible to reduce the intake air noises of low frequencies without using the resonator, etc.

(8) Namely, until the intake air negative pressure F enlarges to a certain extent, the downward rotation moment, which acts at the point P by the coiled spring 2000, serves as a repulsion force, the swinging of the opening-and-closing valve 1000 is suppressed by the coiled spring 2000.
Accordingly, it is possible to effectively inhibit the noises at the low engine revolving speeds, and to prevent the opening-and-closing valve 1000 from flapping.

(9) When the intake air negative pressure F enlarges so that the rotation moment (i.e., the first urging force), F.sub.3.times.L.sub.2, by the intake air negative pressure F is larger than the downward rotation moment (i.e., the second urging force) by the coiled spring 2000, the opening-and-closing valve 1000 swings so as to open the second intake air passage 3000 as illustrated in FIG. 2. At this moment, the component F.sub.3 enlarges as the coiled spring 2000 swings.
Consequently, the coiled spring 2000 deforms so that it is possible to swing the opening-and-closing valve 1000 to open the second intake air passage 3000.

(10) Therefore, in accordance with the intake air duct according to the present invention, the intake air is taken in mainly through the second intake air passage 3000. Accordingly, it is possible to avoid the disadvantages, such as the reduction of the inlet air amount, etc. The intake air noises are lost in the engine noises, and cannot be the irritating noises.

(11) In order to further improve the aforementioned operations, it is preferred that an opening area of the first intake air passage is reduced and an opening area of the second intake air passage is enlarged. Further, an intake duct can be made into a branched construction. For example, when an intake air duct has two intake air passages, e.g., a first intake air passage and a second intake air passage, and when the air passages are made into a passage by joining them on their ways, the present intake air duct can preferably be constituted in the following manner: namely; it is preferred that the intake air passage having the first intake air passage is narrowed so that the acoustic mass is further enlarged, and that the intake air passage having the second intake air passage is widened so that air is supplied in a sufficient amount.

(12) Furthermore, it is possible to provide the present intake air duct with a side branch or a resonator. However, the

present intake air duct can reduce the noises of the low frequencies without providing the side branch or the resonator. Therefore, in order to minimize the space occupied by the present intake air duct in the engine room so as to improve the degree of freedom in boarding the other component members, it is not preferable to provide the side branch or the resonator.

(13) Suppose that a predetermined value F.sub.x of the negative pressure is exerted in the second intake air passage when the opening-and-closing valve closes the second intake air passage, and that a predetermined value F.sub.y of the negative pressure exerted in the second intake air passage when the opening-and-closing valve opens the second intake passage, the relationship of F.sub.x and F.sub.y is F.sub.x.ltoreq.F.sub.y. When the difference between the F.sub.x and the F.sub.y is small in opening the second intake air duct by the opening-and-closing valve, there may arise a case where the opening-and-closing valve flaps to generate the noises. When the difference between the F.sub.x and the F.sub.y is too large, there may arise a case where the intake air amount is insufficient. Accordingly, it is necessary to determine the values of the F.sub.x and the F.sub.y, the urging force of the urging mean, etc., by tuning them deliberately.

(14) By the way, there may arise a case where the air outside an automobile flows directly into an intake air duct to intrude into the intake air passage, and thereby the water and the dust may be deposited on the inner wall. If such is the case, the precision of the operations may be degraded by the foreign materials, which are deposited on the sliding portion, etc. Hence, in the present intake air duct, the interlocking member and the coiled spring are disposed outside the first intake air passage and the second intake air passage. Accordingly, the foreign materials are inhibited from depositing, and the accuracy of the operations is enhanced. Moreover, when a cover, which covers the interlocking member and the coiled spring, is disposed, it is possible to further inhibit the deposition of the foreign materials, and to further improve the reliability.

(15) In the intake air duct according to the present invention, the coiled spring urges the opening-and-closing valve by way of the interlocking member. With this arrangement, it is

unnecessary to prepare urging means as an independent component member. Thus, it is possible to reduce the number of the component members. Hence, the present intake air duct is less expensive. Since the adjustment of the second urging force can be done by adjusting the number of coils of the coiled spring and the coiling density, it is easy to carry out the tuning of the coiled spring.

(32) Note that it is possible to select the material of the coiled spring from the group consisting of, to start with, spring steel wires, hard steel wires, piano wires, oil-tempered wires, stainless steel wires, brass wires, nickel silver wires, phosphor bronze wires, beryllium wires, inconel wires, etc.

Therefore, it would have been obvious to one of ordinary skill in the art to use Masuda's device used in an automobile to modify Masuda's device for the purpose of providing an air duct which reduces the intake air noises at low engine revolving speeds, which can take in a sufficient amount of air at high engine revolving speeds, which inhibits the booming noises of low frequencies from generating, and which can be made with reduced costs without using the electronic control circuit and the electromagnetic valve, etc.

Claim 23 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Takayama et al. (U.S. Patent # 5,977,733) in view of Komada et al. (U.S. Patent # 6,332442 B1).

Takayama et al. show the features of the claimed invention as detailed above, but fail to explicitly show wherein the electronic device is located in an air duct of an automobile.

Komada et al. Is cited for showing an intake air duct. Specifically, Komada et al. (figures 1 to 13) specifically figure 3 discloses wherein the electronic device is located in an air duct of an automobile for the purpose of providing an air duct which reduces the intake air noises at low engine revolving speeds, which can take in a sufficient amount of air at high engine revolving speeds, which inhibits the booming noises of low

frequencies from generating, and which can be made with reduced costs without using the electronic control circuit and the electromagnetic valve, etc.

Therefore, it would have been obvious to one of ordinary skill in the art to use Komada's device use in an automobile to modify Takayama et al.'s deivce for the purpose of providing an air duct which reduces the intake air noises at low engine revolving speeds, which can take in a sufficient amount of air at high engine revolving speeds, which inhibits the booming noises of low frequencies from generating, and which can be made with reduced costs without using the electronic control circuit and the electromagnetic valve, etc.

Response

Applicant's arguments filed 3/28/05 have been fully considered, but are moot in view of the new grounds of rejections detailed above.

The insertion of Applicant's additional claimed language, for example, "new claims 18 to 25" cause for further search and consideration to make this action final.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. ∋ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. ∋ 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. ∋ 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY

PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/48,620,686,685,723,777,528,532	11/18/04 6/4/05
Other Documentation: foreign patents and literature in 257/48,620,686,685,723,777,528,532	11/18/04 6/4/05
Electronic data base(s): U.S. Patents EAST	11/18/04 6/4/05

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone number is (571) 272 1924. The examiner can normally be reached on M-F 6:30AM -7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Alexander O Williams
Primary Examiner
Art Unit 2826

AOW
6/5/05